Mr. Thomas Easterday
Subaru-Isuzu Automotive, Inc.
P. O. Box 5689
Lafayette, Indiana 47903

Dear Mr. Easterday:

Re: Exempt Construction and Operation Status,
157-14535-00050

The application from Subaru-Isuzu Automotive, Inc., received on June 25, 2001, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following equipment, to be located at 5500 State Road East, Lafayette, Indiana, is classified as exempt from air pollution permit requirements:

(a) A new engine manufacturing facility with a design capacity of 17 engines per hour (96,000 engines per year) during phase I, and 33 engines per hour (189,000 engines per year) during phase II. This facility includes engine machining, assembly and testing operations;

(b) Expansion of SIA Plant's existing body shop operations, which will include a robotic welding equipment that will fabricate a new vehicle model. The welding equipment will be capable of assembling 3 vehicles per hour (2,000 vehicles per month);

(c) A solvent recovery system for purge solvent used in the paint shop at the existing assembly plant. This system will include six (6) above-ground storage tanks, identified as clean solvent-Tank C with a capacity of 1,096 gallons; dirty purge-Tank A with a capacity of 1,096 gallons; distillation overs-Tank B with a capacity of 1,096 gallons; methanol-Tank E with a capacity of 1,096 gallons; and clean purge-Tank OK) with a capacity of 1,948.70 gallons; a distillation unit, and one (1) natural gas-fired distillation room heater with a heat input capacity of 1 mmBtu/hr. This system will be designed to handle a throughput rate of 29.17 gallons per hour (168,000 gallons per year);

(d) Seventeen (17) natural gas-fired unit heaters with a total heat input capacity of 6.2 million British Thermal Units per hour (mmBtu/hr);

(e) Six (6) natural gas-fired air handling units with a total heat input capacity of 8 mmBtu/hr; and

(f) Two (2) natural gas-fired door heaters with a total heat input capacity of 1.6 mmBtu/hr.

The following conditions shall be applicable:

(1) Opacity Limitations [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages

for a continuos opacity monitor in a six (6) hour period.

(2) Particulate Matter (PM) [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the PM emissions from the metal machining shall be limited to 1.03 pound per hour at process weight rate of 0.128 ton per hour. This limit shall be determined using the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

(3) Volatile Organic Compounds (VOCs) [326 IAC 8-1-6]

The VOC potential emissions from the Machining Miscellaneous Material Usage and Distillation process are each less than 25 tons per year. Therefore, the Best Available Control Technology (BACT) requirement in 326 IAC 8-1-6 (New Facilities: General Reduction Requirements) does not apply. Any change or modification which may increase Machining Miscellaneous Material Usage and Distillation process VOC potential emissions to 25 tons per year or more shall obtain OAQ approval before such change may occur.

(4) Hazardous Air Pollutants (HAPs) [326 IAC 2-4.1-1]

The single HAP and combined HAPs potential emissions from the Machining Miscellaneous Material Usage and Distillation process are each less than 10 tons per year and 25 tons per year respectively. Therefore, 326 IAC 2-4.1-1 (New Source Toxics Control) does not apply. Any change or modification which may increase each single HAP or combined HAPs emissions to 10 tons per year or more or 25 tons per year or more from the Machining Miscellaneous Material Usage and Distillation process shall obtain OAQ approval before such change may occur.

This existing source has submitted their Part 70 application (TV157-5906-00050) on May 21, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

APD

cc: File -Tippecanoe County
Tippecanoe County Health Department
Air Compliance -Jim Thorpe
Permit Tracking - Janet Mobley
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak
Part 70 Application File - TV-157-5906-00050

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for an Exemption

Source Background and Description

Source Name:	Subaru-Isuzu Automotive, Inc.
Source Location:	5500 State Road 38 East, Lafayette, IN 47903
County:	Tippecanoe
SIC Code:	157-14535
Operation Permit No.:	TV157- 5906-00050 Issuance Date: Pending
Source Modification No.:	157-14535-00050
Permit Reviewer:	Aida De Guzman

The Office of Air Quality (OAQ) has reviewed a modification application from Subaru-Isuzu Automotive, Inc. relating to the construction of the following emission units and pollution control devices:

(a) A new engine manufacturing facility with a design capacity of 17 engines per hour (96,000 engines per year) during phase I, and 33 engines per hour (189,000 engines per year) during phase II. This facility includes engine machining, assembly and testing operations;

(b) Expansion of SIA Plant's existing body shop operations, which will include a robotic welding equipment that will fabricate a new vehicle model. The welding equipment will be capable of assembling 3 vehicles per hour (2,000 vehicles per month);

(c) A solvent recovery system for purge solvent used in the paint shop at the existing assembly plant. This system will include six (6) above-ground storage tanks, identified as clean solvent-Tank C with a capacity of 1,096 gallons; dirty purge-Tank A with a capacity of 1,096 gallons; distillation overs-Tank B with a capacity of 1,096 gallons; methanol-Tank E with a capacity of 1,096 gallons; and clean purge-Tank OK) with a capacity of 1,948.70 gallons; a distillation unit, and one (1) natural gas-fired distillation room heater with a heat input capacity of 1 mmBtu/hr. This system will be designed to handle a throughput rate of 29.17 gallons per hour (168,000 gallons per year);

(d) Seventeen (17) natural gas-fired unit heaters with a total heat input capacity of 6.2 million British Thermal Units per hour (mmBtu/hr);

(e) Six (6) natural gas-fired air handling units with a total heat input capacity of 8 mmBtu/hr; and

(f) Two (2) natural gas-fired door heaters with a total heat input capacity of 1.6 mmBtu/hr.

History

On June 25, 2001 Subaru-Isuzu Automotive, Inc., submitted an application to the OAQ requesting to add additional equipment to their existing plant. Subaru-Isuzu Automotive, Inc., has applied a Part 70 permit (TV157-5906-00050), which is still pending for issuance.

Existing Approvals

The source has been issued the following permits:

(a) PSD (79) 1651, issued on January 19, 1999;

(b) CP 157-4485-00050, issued on September 13, 1995; and

(c) CP157-9619-00050, issued on February 11, 1999.

Recommendation

The staff recommends to the Commissioner that the exemption be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on June 25, 2001. Additional information has been received via e-mail on August 2, 2001, August 3, 2001, August 8, 2001, and October 2, 2001.

Emission Calculations

(a) Engine Manufacturing Facility:
The engine manufacturing operations are a support operation for SIA's vehicle assembly plant. Currently, SIA is supplied with pre-assembled engines for its Isuzu models and is supplied with all engine components for its Subaru models. Final assembly and testing of the Subaru engines now takes place at SIA's plant. The engine manufacturing facility to be added to SIA's plant will provide SIA with the capability to machine cylinder heads, engine blocks and crankshafts for its Subaru model engines, thus bringing in-house some of the major engine component manufacturing now supplied by outside vendors. Thus, the new engine manufacturing area **does not increase the overall capacity** for engine assembly at SIA. It simply replaces engine component machining and intermediate component assembly now supplied by out-source vendors with internally manufactured components. SIA's existing engine assembly and testing equipment will be relocated to the new engine manufacturing plant area.

(1) Emissions from Machining Miscellaneous VOC Material Usage: See Pages 1 through 6 of 15 for detailed calculations.

(2) Engine Performance Test, Endurance Test, Test Benches Emissions: See Pages 7 through 10 of 15 for detailed calculations.

(3) PM and PM10 Emissions from Different Emission Units in the Engine Manufacturing Facility Controlled by Dust Collections Systems: See Page 11 of 15 for detailed calculations.

(b) Body Shop Expansion:
As part of these phased modification projects, SIA is also proposing to modify its body shop operations. The proposed modification would consist of the construction of a 10,000 square foot building addition to the existing body shop building structure. The building addition will be used to house robotic welding and support equipment that will be specifically designed to fabricate **a new body style**. **Some of the existing vehicle**

body fabrication operations will shift to the new equipment to manufacture the new model. Concurrently, production of the new model/body style will replace production of some existing models. It is important to understand that the body shop expansion will not affect the overall production capacity of the current assembly operations at the SIA Plant, which is limited by the capacity of the paint shop and the overall vehicle production limit of SIA's air permits.
Thus, no increase in air emissions will occur as a result of these modifications other than those directly associated with the engine manufacturing or the additional body shop operations. In actuality, the increase in emissions related to body shop operations in the new body shop addition will be offset by a reduction of similar magnitude in emissions from existing body fabrication operations.

(1) Sealer and Adhesive Application Emissions: See Page 5 of 15 for

(c) Solvent Recovery System: See Page 12 of 15 for detailed calculations.
The solvent recovery system project involves installation of several small above-ground storage tanks and a distillation unit for recovery of reusable purge solvent from spent purge solvent resulting from the existing coating operations at the SIA Plant. This system is schedule to commence operations by approximately mid-October, 2001, to satisfy SIA's obligations under an Agreed Order with IDEM concerning hazardous waste regulations. This project is wholly independent of the planned modifications for engine manufacturing and expansion of the body shop and has absolutely no impact on the production capability of SIA's vehicle assembly operations.

(d) Various Natural Gas Combustion Equipment: See Appendix Page 13 through 15 TSD Appendix A for detailed calculations.

(e) Welding Emissions: This operation will be used in the body shop expansion which will accommodate new body style(26,280 units /yr).

Arc Welding: 0.0124 lb of wire (E70S) per unit, using emission factor of 5.2 lb/1000 lb. PM emission is insignificant at 1.69 lbs of PM/yr.
Brazing: Will use 80 mm braze material or less than 7% of that used in arc welding. Emission is insignificant.
Resistance welding: No weld wire is used in this process. Rather, the two pieces of steel are placed in contact with each other and an electric current is conveyed through both pieces at the point of contact. Emission is insignificant.

SUMMARY OF EMISSIONS (TONS/YEAR)											
Pollutant	Machining Miscellaneous Material Usage	Engine Performance Test	Endurance Test	Test Benches	Dust Collection *Systems (Before Dust Collector)	Dust Collection *Systems (After Dust Collector	Natural gas Combustion	VOL Storage Tanks	Distillation	TOTAL Uncontrolled Emissions	TOTAL Controlled Emissions
PM/PM10	0.0	0.0	0.0	0.0	2.8	0.14	0.2	0.0	0.03	3.03	0.37
VOC	6.2	0.008	0.03	0.61	0.0	0.0	0.3	0.54	2.2	9.9	9.9
CO	0.0	0.10	0.40	7.08	0.0	0.0	5.8	0.0	0.36	13.74	13.74
NO_x	0.0	0.008	0.03	0.59	0.0	0.0	6.9	0.0	0.43	7.96	7.96
SO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0026	0.0026	0.0026
Toluene	0.11	0.0	0.0	0,0	0.0	0.0	0.0	0.0	0.0	0.11	0.11
Xylene	0.09	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09	0.09
MEK	0.09	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09	0.09

Note: * Emissions come from crank machining line, lathe dry cutting, and tool sharpening area.

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	3.03
PM-10	3.03
SO_2	0.0026
VOC	9.9

CO	13.74
NO_x	7.9

HAP's	Potential To Emit (tons/year)
Toluene	0.11
Xylene	0.09
MEK	0.09
Total	0.29

Justification for Modification

The source Part 70 permit (T157-5906-00050) is still pending for issuance. The source modification is exempted to have a registration or a permit, pursuant to 326 IAC 2-1.1-3 because VOC is emitted at levels less than 10 tons/year, single HAP is emitted at levels less than 1 ton/year and combined HAPs is emitted at levels less than 2.5 tons/year.

County Attainment Status

The source is located in Tippecanoe County.

Pollutant	Status
PM-10	attainment
SO_2	attainment
NO_2	attainment
Ozone	attainment
CO	attainment
Lead	not determined

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Tippecanoe County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Tippecanoe County has been classified as attainment or unclassifiable for all the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD Definition (based on permits issued):

Pollutant	PSD (79) 1651, issued on July 30, 1987	CP 157-4485, issued on September 13, 1995	CP 157-9619, issued on February 11, 1999
PM	40		
PM-10	40		
SO_2	0.0	**	**
VOC	1,506		

CO	35		
NOx	42		

Note: VOC was based on the PSD allowable emissions, the rest of the pollutants emissions were taken from "OAQ Emission Inventory Report" for the year 1999.

** - being disputed by EPA.

(a) This existing source is an existing major stationary source because VOC an attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
Machining Miscellaneous Material Usage	0.0	0.0	0.0	6.2	0.0	0.0	0.29
Engine Performance Test	0.0	0.0	0.0	0.008	0.10	0.008	0.0
Endurance Test	0.0	0.0	0.0	0.03	0.40	0.03	0.0
Test Benches	0.0	0.0	0.0	0.61	7.08	0.59	0.0
Dust Collection System*	0.14	0.14	0.0	0.0	0.0	0.0	0.0
Natural Gas Combustion	0.2	0.2	0.0	0.3	5.8	6.9	0.0
VOL Storage Tanks	0.0	0.0	0.0	0.54	0.0	0.0	0.0
Distillation	0.03	0.03	0.0026	2.2	0.36	0.43	0.0
TOTAL	0.37	0.37	0.0026	9.9	13.74	7.96	0.29
PSD Significant Levels	25	15	40	40	100	40	-

Note: * Emissions come from crank machining line, lathe dry cutting, and tool sharpening area.

This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Applicability

The source Part 70 permit (TV157-5906-00050) is still pending for issuance**.**

Federal Rule Applicability

(a) New Source Performance Standards (NSPS):

(1) 40 CFR Part 60.110b, Subpart Kb- Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. This NSPS is applicable to storage vessels with a capacity greater than or equal to 40 cubic meters (10,567 gallons) that is used to store organic liquids (VOL).

The proposed storage tanks (clean solvent-Tank C, dirty purge-Tank A, distillation overs-Tank B, methanol-Tank E, and clean purge-Tank OK) are not subject to 40 CFR Part 60.110b, Subpart Kb, because each storage tank has a capacity of less than 10,567 gallons.

(b) National Emission Standards for Hazardous Air Pollutants (NESHAPs):

(1) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this proposed modification.

State Rule Applicability - Entire Source

(a) 326 IAC 2-6 (Emission Reporting)
This modification by itself is not subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit less than 100 tons of VOC, PM10, CO, NOx, or SO_2, per year. However, since the source is a Part 70 source it will be subject to this rule.

(b) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(1) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

(a) 326 IAC 6-3-2 (Process Operations)
This rule mandates a PM emission limit of 1.03 pounds per hour from the metal machining of engine crankshaft at process weight rate of 0.128 ton per hour. This limit shall be determined using the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000)

pounds per hour shall be accomplished by use of the equation:

$E = 4.10 P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour
= 14 kg/unit of crankshaft * 6,000 units/mo * mo/30 days * day/24 hr * ton/907 kg
= 0.128 ton/hr

The metal machining operation is in compliance with 326 IAC 6-3-2, since its uncontrolled PM emissions is lower than the allowable.

(b) 326 IAC 8: (Volatile Organic Sources)
There are no provisions in article 326 IAC 8 that will apply to this modification, because it does not fit any of the sources categories in the rule.

(c) 326 IAC 8-1-6 (General reduction Requirements)
This rule applies to new facility as of January 1, 1980 which have potential VOC emissions of 25 tons per year. The facilities in this modification are not subject to this rule because each facility does not have VOC potential emissions of 25 tons per year or greater.

(d) 326 IAC 2-4.1.-1 (New Source Toxics Control)
This rule applies to sources who construct or reconstruct a major source of hazardous air pollutants after July 27, 1997. This rule is not applicable to this modification because it is not major for hazardous air pollutants (HAPs)

(e) 326 IAC 6-2 (PM Emissions Limit for Indirect Heating Units)
The seventeen (17) natural gas-fired unit heaters with a total heat input capacity of 6.2 mmBtu/hr, six (6) natural gas-fired air handling units with a total heat input capacity of 8 mmBtu/hr, and two (2) natural gas-fired door heaters with a total heat input capacity of 1.6 mmBtu/hr are not subject to 326 IAC 6-2, because they are not sources of indirect heating.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

There are no compliance monitoring requirements applicable to this modification.

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached **Exemption No. 157-14535-00050.**

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

PHASE I MODIFICATION

Machining Chemicals		Ingredients	CAS #	Weight %	Usage (lb/month)	VOC (lbs/month)[2]	VOC (lbs/day)	VOC (lbs/hr)
Yumate EC-63		Fatty Acids	67254-79-9	10.0-19	6999	NA	NA	NA
Usage :	**4,854 gal/month**	Base Stock	64741-89-5	60-95	34995	77.60	2.59	1.08E-01
	18,375 L/month	Monoisopropanolamine	78-96-6	1-9.0	3315	1.02E-01	3.39E-03	1.41E-04
	36837 lb/month	2-Amino-2-methyl Propanol	124-68-5	1-9.0	3315	9.59E-01	0.03	1.33E-03
Specific Gravity	0.91	Secondary Alcohol Ethoxylate	68131-40-8	1-9.0	3315	9.59E-01	0.03	1.33E-03
		Amines, C12-C19 Alkyl		1-9.0	3315	9.59E-01	3.20E-02	1.33E-03
		Alcohols, C8-C18		1-9.0	3315	9.59E-01	0.03	1.33E-03
Yumage WSW-1029T								
Usage:	**6273.75 gal/month**	Triethanolamine	102-71-6	10-19	11433	7.29	0.24	0.010
	23,750 L/month							
	60,172 lb/month							
Specific Gravity	1.15							

Assembly Chemicals		Ingredients	CAS #	Weight %	Usage (lb/month)	VOC (lbs/month)	VOC (lbs/day)	VOC (lbs/hr)
Three Bond 1280B		Siloxanes and Silicones	70131-67-8/63	35-45	106.14375	NA	NA	NA
Usage:	**107,000 grams/mth**	Calcium Carbonate	471-34-1	20-30	70.7625	NA	NA	NA
	235.875 lb/month	Silica Crystalline	14808-80-7	10-20.0	47.175	NA	NA	NA
Specific Gravity	1.44	Dimethyl, phenylmethyl siloxane trimethyl	63148-52-7	1-10.0	23.5875	23.5875	0.786	0.033
		2-Butanone	2224-33-1	2-5.0	11.79375	11.79375	0.393	0.016
		Fumed Silica	68611-44-9 or 60842-32-2	1-5.0	11.79375	NA	NA	NA
		TS-720 CAR-O-SIL	67762-90-7	1-5.0	11.79375	NA	NA	NA
		Silicic Acid	56275-01-5	1-5.0	11.79375	NA	NA	NA
		Titanium Dioxide	13463-67-7	1	2.35875	NA	NA	NA
		Carbon Black	1333-86-4	1	2.35875	NA	NA	NA
		Methyl Ethyl Metoximo (MEKO)	92-29-7			NA	NA	NA

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

Yumage W-180									
Usage :	**6273.75 gal/month**	Diethanolamine	111-42-2	10-19	10339	8.98	0.30	0.012
	23,750 L/month	Monoethanolamine	141-43-5	1.0-9	4897	48.21	1.61	0.07
	54,416 lb/month							
Specific Gravity	1.04							

Assembly Chemicals		**Ingredients**	**CAS #**	**Weight %**	**Usage (lb/month)**	**VOC (lbs/month)**	**VOC (lbs/day)**	**VOC (lbs/hr)**
Three Bond 1207F		Silica Crystalline	14808-80-7	40-50	47.375	NA	NA	NA
Usage :	**43,000 grams/mth**	Siloxanes and Silicones	70131-67-8/63	35-45	42.6375	NA	NA	NA
	94.75 lb/month	Fumed Silica	68611-44-8	3.0-6	5.685	NA	NA	NA
Specific Gravity	1.5	Aluminum Powder	7429-90-5	1.0-4	3.79	NA	NA	NA
		Silane	15332-99-7	1.0-3	2.8425	NA	NA	NA
		Silic Acid	56275-01-5	< 2.0	1.895	NA	NA	NA
		Oxirane	9038-95-3	< 1.0	0.9475	NA	NA	NA
		Silicone Oil	63148-62-9	<1.0	0.9475	NA	NA	NA
		1,1,3,3-Tetramethyl guanidine	69709-01-9	< 1.0	0.9475	0.9475	0.032	0.001
		3-Aminopropyltriethoxysilcane	919-30-2	< 1.0	0.9475	0.9475	0.032	0.001
		Toluene *	108-88-3	< 0.8	0.758	0.758	0.025	0.001
Three Bond 1215B		Calcium Carbonate	471-34-1	40-50	27.5625	NA	NA	NA
Usage :	**25,000 grams/mth**	Siloxanes and Silicones	70131-67-8	25-35	19.29375	NA	NA	NA
	55.1 lb/month	2-Butadone	2224-33-1	5.0-10	5.5125	5.5125	0.184	0.008
Specific Gravity	1.48	Silicone Oil	63148-62-9	3.0-6	3.3075	NA	NA	NA
		Toluene *	108-88-3	0.1-2	1.1025	1.1025	0.037	0.002
		Fumed Silica	or 60842-32-2	0.1-1.0	0.55125	NA	NA	NA
		Benzotriazole	95-14-7	0.1-1	0.55125	0.55125	0.018	7.656E-04
		Organopolysiloxane Solution	Trade Secret	0.1-1	0.55125	0.55125	0.018	7.656E-04
		Organopolysiloxane Mixture	Trade Secret	0.1-1	0.55125	0.55125	0.018	7.656E-04
		Dibutytin bis(2-ethyhexanoate)	2781-10-4	0.01-1	0.55125	0.55125	0.018	0.001

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

Three Bond 1215H		Calcium Carbonate	471-34-1	45-50	35.25	NA	NA	NA
Usage :	**32,000 grams/mth**	Siloxanes and Silicones	70131-87-8	25-35	24.675	NA	NA	NA
	70.5 lb/month	2-Butanone	2224-33-1	5-10.0	7.05	7.05	0.235	0.010
Specific Gravity	1.53	Silicone Oil	63148-62-9	3-6.0	4.23	NA	NA	NA
		Titanium Dioxide	13463-67-7	0.1-2	1.41	NA	NA	NA
		Fumed Silica	68811-44-9 or 60842-32-	0.1-1	0.705	NA	NA	NA
		Toluene *	108-88-3	0.1-2	1.41	1.41	0.047	0.002
		Benzotriazole	95-14-7	0.1-1	0.705	0.705	0.024	0.001
		Organopolysiloxane Solution	Trade Secret	0.1-1	0.705	0.705	0.024	0.001
		Iron Oxide Yellow	51274-00-1	0.1-1	0.705	NA	NA	NA
		Iron Oxide (Ferrous Oxide)	1345-25-1	0.1-1	0.705	NA	NA	NA
		Iron Oxide Fume	1309-37-1	0.1-1	0.705	NA	NA	NA
		Dibutytin bis(2-ethyhexanoate)	2781-10-4	0.01-1	0.705	0.705	0.02	9.79E-04

Assembly Chemicals		**Ingredients**	**CAS #**	**Weight %**	**Usage (lb/month)**	**VOC (lbs/month)**	**VOC (lbs/day)**	**VOC (lbs/hr)**
Three Bond 1105		n-Butyl Acetate		< 10%	4.4125	NA	NA	NA
Usage :	**20,000 grams/mth**	Xylene *	133-02-07	20-30	13.2375	13.2375	0.44	0.02
	44.125 lb/month	Methyl Ethyl Ketone *	78-9-33	20-30	13.2375	13.2375	0.44	0.02
Specific Gravity	0.92	Toluene *	108-88-3	15-25	11.03125	11.03125	0.37	0.02
		Nitrile Rubber, Other		15-25	11.03125	NA	NA	NA

Water Treatment Chemicals [1]		**Ingredients**	**CAS #**	**Weight %**	**Usage (lb/month)**	**VOC (lbs/month)**	**VOC (lbs/day)**	**VOC (lbs/hr)**
Spectrus BD152	**1 gal/month**	Ethylene Glycol *	107-21-1	16-20	NA	NA	NA	NA
Usage:	**8.36 lb/month**	Triethylene glycol monobutyl ether	143-22-6	NA	NA	NA	NA	NA
Specific Gravity	1.002	N,N-Dimethyl decanamide	14433-76-2	NA	NA	NA	NA	NA
		N,N-Dimethyl Octanamide	1118-92-9	NA	NA	NA	NA	NA

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

AEC 213		**15**	**gal/month**	Sodium Hydroxide	1310-73-2	NA	NA	NA	NA	NA
		160.25	**lb/month**	Ethylenediamine Tetraacetic acid	64-02-8	NA	NA	NA	NA	NA
Specific Gravity		1.281		Sodium Molybdate	7631-95-0	NA	NA	NA	NA	NA
				D-glucose, decyl octyl ethers	68515-73-1	NA	NA	NA	NA	NA
Spectrus OX103		**25**	**lb/month**	1-Bromo-3-Chlror-5,5-Dimethylhydantoin	16079-88-2	NA	NA	NA	NA	NA
Usage:										
Specific Gravity	NA									
		25	**gal/month**							
Sulfuric Acid		**382.389**	**lb/month**	Sulfuric Acid	7664-93-9	93-98	374.74	NA	NA	NA
Usage:				Water	7732-18-5	2-7.0	26.77	NA	NA	NA
Specific Gravity		1.834								
Specturs NX114		**2**	**gal/month**	2-Bromo-Nitropropane-1,3-Diol	52-51-7	NA				
Usage:		**16.8**	**lb/month**	Magnesium Nitrate	10377-60-3	2.0-5	0.84	NA	NA	NA
Specific Gravity	NA			5-Chloro-2-Methyl-4-Isothiazolin	26172-55-4	NA		NA	NA	NA
Density		8.4		Magnesium Chloride	7786-30-3	NA		NA	NA	NA

TOTALS FOR PHASE I	240.95	8.03	0.33
TOTAL FOR PHASE I (TON/YEAR)		**1.45**	

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

BODY SHOP EXPANSION

ADHESIVE CHEMICALS								
Sunnex SH-300		Carbonate Compound 2		10-20	810.19	NA	NA	NA
Usage :	**1,470 kg/month**	Epoxy Resin 1		25-35	1417.83	NA	NA	NA
	4050.95 lbs/month	Barium Compound		5-10	405.10	NA	NA	NA
	405.10 gal/month	Epoxy Resin 2		10-20	810.19	NA	NA	NA
				5-10	405.10	NA	NA	NA
Specific Gravity	**10 lbs/gallon**	Calcium Compound 2		5-10	405.10	NA	NA	NA
		Sillicate Compound 1		5-10	405.10	NA	NA	NA
		Calcium Compound 3		1-5	202.55	NA	NA	NA
		Pigment		1-5	202.55	NA	NA	NA
		Organic Compound 1		1-6	243.06	243.06	8.10	0.34
		Epoxy Resin 3		1-6	243.06	NA	NA	NA
		Polymer		1-5	202.55	NA	NA	NA
		Organic Compound 2		1-5	202.55	202.55	6.75	0.28
		Sillicate Compound 2		< 1	40.51	NA	NA	NA
				TOTALS FROM ADHESIVES		445.60	14.85	0.62
						TOTAL FROM ADHESIVES (TONS/YEAR)	**2.67**	

PHASE II MODIFICATION

NortiakeCool NK-88	**450 liters/month**	Monoethanalamine	141-43-5	3-7	91.09	91.09	3.04	0.13
Usage :	**118.88 gal/month**	Diethanolamine	111-42-2	7-12	156.15	156.15	5.21	0.22
	1301.26 Lbs/month							
Specific Gravity	1.05							
Yumate KC-663	**366.67 liters/month**							
Usage :	**96.86 gal/month**	Triethanolamine	102-71-6	1-9	91.79	91.79	3.06	1.27E-01
	1019.90 Lbs/month							
Specific Gravity	1.01							
Mobil DTE 25	**600 liters/year**	2-Pentanol	2215-35-2	<1	0.14	0.14	0.00	2.01E-04
Usage :	**158.50 gal/year**	Heavy Paraffinic Distillate	64742-65-0	90-100	14.48	NA	NA	NA
		Severely Hydrotreated						
	14.48 Lbs/month	Paraffinic Distillate	64742-54-7	<1	0.14	NA	NA	NA
Relative Density	0.877	Calcium Salt	57655-77-3	<1	0.14	NA	NA	NA
		Light Naphthenic Distillate	64741-97-5	<1	0.14	NA	NA	NA
		Heavy Paraffinic Distillate	64741-88-4	<1	0.14	NA	NA	NA
		Kerosene	8008-20-6	NA	NA	NA	NA	NA

EMISSIONS FROM MISCELLANEOUS MATERIAL USAGE

Yuman SF-37	**2000**	**liters/year**	Hydrogenated Distillates	64771-72-8	60-95	366.28	NA	NA	NA
Usage :	**528.34**	**gal/year**							
	385.56	**Lbs/month**							
Specific Gravity	0.84								
Three Bond 1804			Isoparaffine		25-35	82.56	NA	NA	NA
Usage :	**85.6**	**Kg/month**	Petroleum sulfonate		10-20	47.18	NA	NA	NA
	235.89	**Lbs/month**	LPG		40-50	117.95	NA	NA	NA
Specific Gravity	0.8								
					TOTALS FROM PHASE II		339.18	11.31	4.71E-01
					TOTAL FROM PHASE II (TONS/YEAR)			2.04	
					GRAND TOTAL FOR ALL AREAS		1025.73	34.19	1.42
					GRAND TOTAL FOR ALL AREAS (TONS/YEAR)			**6.15**	

Toluene (tons/yr	Xylene (tons/yr	MEK (tons/yr)
0.11	0.09	0.09

* These chemicals are Hazardous Air Pollutants (HAPs)

[1] Water Treatment chemicals are in a closed loop system. Therefore, VOC and HAP emissions are not applicable.

[2] VOC emissions calculated from MSDS sheets and usage information provided by Subaru-Isuzu.

Engine Performance Test

Mode	E/G rev(rpm)	Speed (km/hr)	Speed (mile/hr)	Time(hr)	Distance (km)	Mileage (miles)	EMISSIONS					
							Hydrocarbons		CO		NOx	
							grams	pounds	grams	pounds	grams	pounds
Rev Up	3000	126.5	78.6	0.033	4.22	2.62	0.48	0.001	5.63	0.012	0.47	0.001
Warm Up	2000	84.3	52.4	0.333	28.1	17.46	3.21	0.007	37.49	0.083	3.11	0.007
Preconditioning	1200	50.6	31.4	0.333	16.86	10.48	1.93	0.004	22.50	0.050	1.87	0.004
	2400	101.2	62.9	0.333	33.72	20.95	3.85	0.008	44.98	0.099	3.73	0.008
	3600	151.7	94.3	0.333	50.58	31.43	5.78	0.013	67.48	0.149	5.59	0.012
	4800	202.3	125.7	0.333	67.44	41.91	7.71	0.017	89.98	0.198	7.46	0.016
	5400	227.6	141.4	0.167	37.94	23.57	4.34	0.010	50.60	0.112	4.20	0.009
Preparation Test	2000	84.3	52.4	0.033	14.05	8.73	1.61	0.004	18.74	0.041	1.55	0.003
W.O.T. Test	800	33.7	21	0.033	1.12	0.7	0.13	0.000	1.50	0.003	0.12	0.000
	1200	50.6	31.4	0.033	1.69	1.05	0.19	0.000	2.25	0.005	0.19	0.000
	1600	67.4	41.9	0.033	2.25	1.4	0.26	0.001	3.01	0.007	0.25	0.001
	2000	84.3	52.4	0.033	2.81	1.75	0.32	0.001	3.76	0.008	0.31	0.001
	2400	101.2	62.9	0.033	3.37	2.1	0.39	0.001	4.51	0.010	0.37	0.001
	2800	118	73.3	0.033	3.93	2.44	0.45	0.001	5.24	0.012	0.43	0.001
	3200	134.9	83.8	0.033	4.5	2.79	0.51	0.001	5.99	0.013	0.50	0.001
	3600	151.7	94.3	0.033	5.06	3.14	0.58	0.001	6.74	0.015	0.56	0.001
	4000	168.6	104.8	0.033	5.62	3.48	0.64	0.001	7.47	0.016	0.62	0.001
	4400	185.5	115.2	0.033	6.18	3.84	0.71	0.002	8.24	0.018	0.68	0.002
	4800	202.3	125.7	0.033	6.74	4.19	0.77	0.002	9.00	0.020	0.75	0.002
	5200	219.2	136.2	0.033	7.31	4.54	0.84	0.002	9.75	0.021	0.81	0.002
	5600	236	146.7	0.033	7.87	4.89	0.90	0.002	10.50	0.023	0.87	0.002
	6000	252.9	157.2	0.033	8.43	5.24	0.96	0.002	11.25	0.025	0.93	0.002
Preparation Test	2000	84.3	52.4	0.667	56.2	34.92	6.43	0.014	74.97	0.165	6.22	0.014
Partial Throttle Test (x4)	800	33.7	21	0.133	4.5	2.79	0.51	0.001	5.99	0.013	0.50	0.001
	1200	50.6	31.4	0.133	6.74	4.19	0.77	0.002	9.00	0.020	0.75	0.002
	1600	67.4	41.9	0.133	8.99	5.59	1.03	0.002	12.00	0.026	1.00	0.002
	2000	84.3	52.4	0.133	11.24	6.98	1.28	0.003	14.99	0.033	1.24	0.003
	2400	101.2	62.9	0.133	13.49	8.38	1.54	0.003	17.99	0.040	1.49	0.003
	2800	118	73.3	0.133	15.74	9.78	1.80	0.004	21.00	0.046	1.74	0.004
	3200	134.9	83.8	0.133	17.98	11.18	2.06	0.005	24.00	0.053	1.99	0.004
	3600	151.7	94.3	0.133	20.23	12.57	2.31	0.005	26.99	0.059	2.24	0.005
	4000	168.6	104.8	0.133	22.48	13.97	2.57	0.006	29.99	0.066	2.49	0.005
	4400	185.5	115.2	0.133	24.73	15.37	2.83	0.006	33.00	0.073	2.74	0.006
	4800	202.3	125.7	0.133	26.98	16.76	3.08	0.007	35.98	0.079	2.98	0.007
	5200	219.2	136.2	0.133	29.23	18.16	3.34	0.007	38.99	0.086	3.23	0.007
	5600	236	146.7	0.133	31.47	19.56	3.60	0.008	42.00	0.093	3.48	0.008
	6000	252.9	157.2	0.133	33.72	20.95	3.85	0.008	44.98	0.099	3.73	0.008
				Total - One Engine	**643.51**	**399.85**		**0.162**		**1.893**		**0.157**

100 H Endurance Test

Mode	E/G rev(rpm)	Speed (km/h)	Speed (mile/h)	Time(min)	Distance (km)	Mileage (miles)	EMISSIONS					
							Hydrocarbons		CO		NOx	
							grams	pounds	grams	pounds	grams	pounds
Warm Up	2000	84.3	52.4	0.2	16.86	10.48	1.93	4.25E-03	22.50	0.05	1.87	4.11E-03
Cycle Operation	2000	84.3	52.4	33.33	2810.11	1746.12	321.29	0.71	3748.92	8.26	310.81	0.69
	3600	151.7	94.3	33.33	5058.2	3143.02	578.32	1.27	6748.06	14.88	559.46	1.23
	5600	236	148.7	33.33	7868.31	4889.14	899.60	1.98	10496.98	23.14	870.27	1.92
			Total - One Engine		**15753.48**	**9788.76**		**3.97**		**46.33**		**3.84**

EMISSION FACTORS

1998+ Nontampered HC Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	0.184	g/mile
1992+ Nontampered CO Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	2.147	g/mile
1996+ Nontampered NOx Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	0.178	g/mile

Emission factors taken from US EPA Highway Mobile 5 Emissions Document (Appendix H-3, Table 1.1A.1)

E/G Test Bench

Mode	E/G rev(rpm)	Speed (km/h)	Speed (mile/h)	Time(min)	Distance (km)	Mileage (miles)	EMISSIONS					
							Hydrocarbons		CO		NOx	
							grams	pounds	grams	pounds	grams	pounds
Warm Up	3000	126.5	78.6	0.67	8.43	5.24	0.96	2.13E-03	11.25	2.48E-02	0.93	2.06E-03
Gas Measurement	800	33.7	21	0.011	0.37	0.23	0.04	9.33E-05	0.49	1.09E-03	0.04	9.03E-05
Check	3000	126.5	78.6	0.003	0.35	0.22	0.04	8.92E-05	0.47	1.04E-03	0.04	8.63E-05
			Emissions from 1 Bench Test		**9.15**	**5.69**		**2.31E-03**		**2.69E-02**		**2.23E-03**

Emissions from one bench performing 5 tests per hour (lbs/hr)	0.012		0.13	0.011
Emissions from 12 benches performing 60 tests per hour (lbs/hr)	**0.14**		**1.62**	**0.13**
Emissions from 12 benches performing 1440 tests per day (lbs/day)	**3.32**		**38.78**	**3.22**
Emissions from 12 benches performing 525,600 tests per year (lbs/year)	1213.15		14155.64	1173.59
Emissions from 12 benches performing 525,600 tests per year (tons/year)	**0.61**		**7.08**	**0.59**

EMISSION FACTORS

1998+ Nontampered HC Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	0.184	g/mile
1992+ Nontampered CO Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	2.147	g/mile
1996+ Nontampered NOx Exhaust Emission Rate for Low Altitude Light Duty Gasoline Powered Vehicles	0.178	g/mile

Emission factors taken from US EPA Highway Mobile 5 Emissions Document (Appendix H-3, Table 1.1A.1)

TEST TYPE	UNCONTROLLED EMISSIONS								
	HYDROCARBONS			CO			NOX		
	tons/year	lbs/day [1]	lbs/hr [2]	tons/year	lbs/day	lbs/hr	tons/year	lbs/day	lbs/hr
Performance Test	0.008	0.05	0.002	0.10	0.54	0.02	0.008	0.04	0.002
Endurance Test	0.03	0.19	0.01	0.40	2.21	0.09	0.03	0.18	0.01
12 Test Benches	0.61	3.32	0.14	7.08	38.78	1.62	0.59	3.22	0.13
TOTAL ENGINE TEST EMISSIONS	0.65	3.56	0.15	7.58	41.53	1.73	0.63	3.44	0.14

Engine Performance Test:	3.5 days per one engine	104	Engines per year
Engine Endurance Test:	21 days per one engine	17	Engines per year
12 Engine Test Benches:	1440 engines per day	525,600	Engines per year

[1] Per Subaru-Isuzu Automotive, Inc., there are 365 work days per year.

[2] Per Subaru-Isuzu Auromotive, Inc., there are 24 hours in a work day.

DUST COLLECTION SYSTEMS (total of 11) FOR PHASE I AND II MODIFICATION PROJECTS

DUST COLLECTOR OUTLET FLOW RATE	PM/PM_{10} EMISSION FACTOR [1]	LBS/HOUR [2]	LBS/DAY	LBS/MONTH [3]	LBS/YEAR	TONS/YEAR
15 m^3/min	1.46 mg/m^3	0.003	0.07	2.16	25.86	0.01
	11 UNITS Controlled Emissions	0.03	0.76	23.71	284.49	0.14
	11 UNITS uncontrolled Emissions					" 2.8

Baghouse control Efficiency = 95%
0.0022046 pounds per gram.

[1] PM/PM_{10} emission factor provided by Subaru-Isuzu Automotive, Inc.

[2] Lbs/hour calculation: Flow Rate * Emission Factor * 1 gram/1000milligrams * 0.0022046 lbs/gram * 60 minutes/hour

[3] Lbs/month calculation is based on 31 days per month (24 hours /day, 365 days/year).

Methodology:
PM Uncontrolled = PM controlled /(1-0.95%)

DISTILLATION EMISSIONS

EPA AP-42 Table 4.7-1 Emissions Factors for Solvent Reclaiming

Distillation Unit		Emissions Factor	Throughput	Density	lbs/yr	lbs/voc/yr	tons/voc/yr
		lb/Ton Reclaimed	gal/year	lbs/gal			
2	Condensor Vents	3.3	168,000	7	1176000	1940.4	1.94
1	Spillage	0.2	168,000	7	1176000	117.6	0.06
1	Loading	0.72	168,000	7	1176000	423.36	0.21

Gas Heater Emission Factors AP-42 Tables 1.4-1 & 1.4-2

Pollutant	PM/PM_{10}	SO_2	NOx	CO	VOC
Emission Factors (lbs/MMcf)	7.6	0.6	100	84	5.5

Gas Fired Air Handling Units Emissions

Calculation Method:

Emissions **(tons/yr)** = Emission Factors (lbs/MMcf) x MMcf/1020 MMBtu x Heat Input (MMBtu/hr) x 8760 (hours/yr) / 2000 (lbs/ton)

Code	Area Served by Heater	Heat Input MMBtu/hr	Pollutant (tons/yr)				
			PM/PM_{10}	**SO_2**	**NOx**	**CO**	**VOC**
MJ-1	Distillation Room	1.00	0.0326	0.0026	0.4294	0.3607	0.0236

	Pollutant (tons/yr)				
	PM/PM_{10}	**SO_2**	**NOx**	**CO**	**VOC**
Distillation Totals	0.03	0	0.43	0.36	2.20

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

17 nat. gas-fired unit heaters

Company Name: Subaru-Isuzu Automotive, Inc.
Address City IN Zip: 5500 State Road 38 East, Lafayette, IN 47903
Plt ID: 157-14535-00050
Reviewer: Aida De Guzman
Date Application Received: July 18, 2001

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
6.2	54.3

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.1	0.2	0.0	2.7	0.1	2.3

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

6 nat. gas-fired air handling units

Company Name: Subaru-Isuzu Automotive, Inc.
Address City IN Zip: 5500 State Road 38 East, Lafayette, IN 47903
Plt ID: 157-14535-00050
Reviewer: Aida De Guzman
Date Application Received: July 18, 2001

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
8.0	70.1

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.1	0.3	0.0	3.5	0.2	2.9

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

2 nat. gas-fired door heaters

Company Name: SUbaru-Izusu Automotive, Inc.
Address City IN Zip: 5500 State Road 38 East, Lafayette, IN 47903
Plt ID: 157-14535-00050
Reviewer: Aida De Guzman
Date Application Received: July 18, 2001

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
1.6	14.0

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.0	0.1	0.0	0.7	0.0	0.6

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).